

November 18, 2005

**Cruise Report OP-01-05
Longline Survey of the Gulf of Alaska and Eastern Bering Sea
May 28-September 1, 2005**

Prepared by

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On September 5, 2005, the Alaska Fisheries Science Center (AFSC), completed the twenty-sixth annual longline survey of Alaska sablefish (*Anoplopoma fimbria*) resources of the upper continental slope (Figure 1). This survey was designed to continue the time series (1979-94) of the Gulf of Alaska portion of the Japan-U.S. cooperative longline survey that was discontinued after 1994. NMFS has surveyed the Gulf of Alaska annually since 1987, the eastern Aleutian Islands biennially since 1996, and the eastern Bering Sea biennially since 1997. The Gulf of Alaska and eastern Bering sea were sampled in 2005.

2005 OBJECTIVES

1. Determine the relative abundance and size composition of the commercially important species: sablefish, shortspine thornyhead (*Sebastolobus alascanus*), and rougheye and shortraker rockfishes (*Sebastes aleutianus* and *S. borealis*)
2. Determine the relative abundance and size composition of other groundfish species caught during the survey: Pacific cod (*Gadus macrocephalus*), arrowtooth flounder (*Atheresthes stomias*), grenadiers (Macrouridae), and Greenland turbot (*Reinhardtius hippoglossoides*).
3. Tag and release sablefish, shortspine thornyhead, and Greenland turbot throughout the cruise to determine migration patterns.
4. Implant Greenland turbot with electronic tags that record water temperature, depth, and time.
5. Collect sablefish otoliths to study the age composition of the population.

6. Conduct a rougheye rockfish genetics experiment.

VESSEL AND GEAR

Survey operations were conducted using the F/V *Ocean Prowler*, a chartered U.S. longline vessel. The 47 m (155 ft) long vessel carried standard longline hauling gear and was equipped with radios, radars, GPS receivers, video and track plotters, a processing line, three sets of plate freezers, and refrigerated holds. Vessel personnel consisted of a captain, an engineer, a cook, a quality-control technician, two contract biologists, six fishermen and five processors.

Gear configuration was unchanged from that of the 1988-2004 surveys. Units of gear (skates) were 100 m (55 fm) long and contained 45 size 13/0 Mustad¹ circle hooks. Hooks were attached to 38 cm (15 in) gangions that were secured to beackets tied into the groundline at 2 m (6.5 ft) intervals. Five meters (16 ft) of groundline were left bare at each end. Gangions were constructed of medium lay #60 thread nylon, beacket material was medium lay #72 thread nylon, and groundline was medium lay 9.5 mm (3/8 in) diameter nylon.

A set of gear consisted of a flag and buoy array at each end followed sequentially by varying lengths by depth of 9.5 mm diameter nylon buoyline, a 92 m (50 fm) section of 9.5 mm polypropylene floating line, a 16 kg (35 lb) piece of chain (to dampen the effect of wave surge on the buoyline), 92 m of 9.5 mm nylon line, a 27 kg (60 lb) halibut anchor, and 366 m (200 fm) of 9.5 mm nylon line. The groundline was weighted with 3.2 kg (7 lb) lead balls at the end of each skate. Hooks were hand baited with chopped squid (*Illex*) at a rate of about 5.7 kg (12.5 lb) per 100 hooks. Squid heads and tentacles were not used for bait.

Total groundline set each day was 16 km (8.6 nmi) long and contained 160 skates and 7,200 hooks except in the eastern Bering Sea where 180 skates with 8,100 hooks are set. Two eighty-skate groundlines laid end to end were set at each station along the upper continental slope. A single groundline of eighty skates was set at each station in the gullies except Amatuli Gully (station 87) that consists of 160 skates.

¹ Citation of the above brand name does not constitute U.S. government endorsement.

2005 OPERATIONS

The charter began on May 28 at Unalaska, Alaska, and ended on September 1 at Unalaska. The charter period was divided into seven legs of 21, 14, 17, 4, 10, 13 and 13 days. During Leg 1, most of the stations along the upper continental slope of the eastern Bering Sea were sampled. During Leg 2 stations in the Gulf of Alaska were sampled near the western end of Umnak Island and extending eastward to Sand Point. Leg 3 began near Dixon Entrance and continued north and westward to Yakutat. During Leg 4 the rougheye rockfish genetics experiment was conducted in the Yakutat vicinity. During Leg 5, the area between Yakutat and Cordova was sampled, and during Leg 6 the area from Cordova to Kodiak was sampled. During Leg 7, the area from Kodiak to Sandpoint was sampled.

From 1988 to 1990 the survey period was from June 26 to September 12. The survey periods in 1991 through 1994 were 2-1/2 weeks later than in 1988 through 1990. The 1991-1994 surveys were delayed to avoid the commercial fishery that started 45 days later than in 1988 through 1990. Starting in 1995, the survey period was moved back to near the 1988-1990 time periods because of the extensive increase in length of the fishing season resulting from the implementation of the Individual Fishing Quota (IFQ) system in the sablefish and Pacific halibut longline fisheries. Beginning in 1998 the order in which the stations were sampled was changed to avoid conflicting with an early July rockfish fishery in the central Gulf of Alaska. Instead of continuing to sample in an easterly direction from Sand Point to Dixon Entrance the survey vessel transited to Dixon Entrance during early July and resumed sampling in a westerly direction going from Dixon Entrance to Sand Point.

Rougheye Rockfish genetics Experiment

A rougheye rockfish genetics experiment was conducted near Yakutat 25-26 July 2005. The purpose of this study was to collect genetic tissue of rougheye rockfish along with detailed depth information to investigate depth specific distribution of rougheye rockfish. Recent genetic work by ABL and the University of Alaska Fairbanks (UAF) indicates there may be two genetically distinct species of rougheye rockfish. Many of the specimens used for this initial analysis were collected during the sablefish longline survey. One of the hypotheses of this work is that these two species are separated by depth. However, using standard survey methods depth accuracy to within approximately 100m was available for specimens collected during the longline survey. More accurate depth information was necessary to determine if there is a depth specific influence on these two species. Sixteen time depth recorders were placed along the groundline to record accurate depth measurements. Ninety-eight rougheye rockfish were caught and sampled for genetic identification. Results should help to determine if depth differences exist between the two species.

Survey Operations

Sixteen stations along the upper continental slope of the eastern Bering Sea and 45 stations along the upper continental slope of the Gulf of Alaska were sampled at a rate of one station per day (Figure 1). Surveyed depths ranged from approximately 200 to 1,000 m, although at some stations, depths less than 150 m or more than 1,000 m were sampled (Table 1). In addition, twenty-seven stations were sampled in gullies at the rate of one to two stations per day. The sampled gullies were Shelikof Trough, Amatuli Gully, W-grounds, Yakutat Valley, Spencer Gully, Ommaney Trench, and Dixon Entrance. One station (42) was sampled on the continental shelf off Baranof Island.

The gear was set from shallow to deep and was retrieved in the same order, except on occasions when groundlines parted or sea conditions dictated that it be pulled from the opposite direction. Setting began about 0630 hours Alaska Daylight Time. Retrieval began about 0930 hours and was completed by about 1930 hours.

Data Collection

Catch data were recorded on a hand-held electronic data logger. During gear retrieval a scientist recorded the species of each hooked fish, the condition of each unoccupied hook (absent, broken, or tangled), and whether bait remained on the hook. Depth was entered when the first and last skates came aboard, at the beginning of each fifth skate, and when the vessel crossed over into a new depth stratum (0-100 m, 101-200 m, 201-300 m, 301-400 m, 401-600 m, 601-800 m, 801-1,000 m and 1,001-1,200 m).

Length frequency data were collected electronically with a bar code based measuring board and a bar code reader/data storage device. Length was sampled by depth interval for sablefish, Pacific cod, grenadiers, arrowtooth flounder, rockfish, and thornyheads. Lengths of sablefish and Pacific cod also were recorded by sex. Pacific halibut were counted and released at the rail without measuring. Catch and length frequency data were transferred to a computer and electronic backup media twice a day. As in the previous surveys, the charter vessel was allowed to retain most of the catch once the scientific data were recorded.

RESULTS

One hundred fifty-two longline hauls were completed (Table 1). Sablefish was the most frequently caught species, followed by giant grenadiers, shortspine thornyhead, Pacific cod, arrowtooth flounder and rockfish and (Table 2). A total of 81,460 sablefish, with an estimated total round weight of 254,762 kg (561,750 lb), was taken during the survey (Table 3).

The highest total sablefish catch was observed at station 74 in the central Gulf of Alaska (Table 2). Station 99 in eastern Gulf of Alaska had the largest average length sablefish (Table 3).

A total of 3,521 sablefish, 289 shortspine thornyhead, were tagged and released during the survey. Electronic tags were implanted in 24 Greenland turbot. Length-weight data and otoliths were collected from 2,247 sablefish.

Killer whales preying on sablefish and Greenland turbot during retrieval were observed at eastern Bering Sea stations 1, and western Gulf of Alaska stations 62, 63, 64, and 66. Whale predation at stations 1, 62, 63, and 64 was extensive enough to preclude their inclusion in the survey analysis. Therefore, they are not listed in tables 2 and 3 of this report.

More detailed results and comparisons to previous surveys will be reported in a subsequent technical document.

SCIENTIFIC PERSONNEL

- Leg I (May 28 - June 18)
 Larry Haaga, Field Party Chief, RACE
 Jason Wright, Contract Biologist
 Ken Orwig, Contract Biologist
- Leg II (June 18- July 3)
 Angela Middleton, Field Party Chief, ABL
 Mike Riley, ABL
 Jason Wright, Contract Biologist
 Ken Orwig, Contract Biologist
- Leg III (July 8 - July 24)
 Dave Clausen, Field Party Chief, ABL
 Joel Rice, University of Washington
 Jason Wright, Contract Biologist
 Ken Orwig, Contract Biologist
- Leg IV (July 24 - July 27)
 Chris Lunsford, Field Party Chief, ABL
 Katie Palof, UAF
 Jason Wright, Contract Biologist
 Ken Orwig, Contract Biologist
- Leg V (July 27 - August 7)
 Chris Lunsford, Field Party Chief, ABL
 Cindy Tribuzio, UAF
 Jason Wright, Contract Biologist
 Ken Orwig, Contract Biologist

Leg VI (August 8- August 20)
Nancy Maloney, Field Party Chief, ABL
Jason Wright, Contract Biologist
Ken Orwig, Contract Biologist

Leg VII (August 20 - September 1)
Larry Haaga, Field Party Chief, RACE
Jason Wright, Contract Biologist
Ken Orwig, Contract Biologist

ABL - Auke Bay Laboratory
RACE - Resource Assessment and Conservation Engineering Division
UAF - University of Alaska Fairbanks

For further information contact either

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Table 1.--Haul number (set), station number, and starting and ending positions and depths for the 2005 NMFS longline survey of the Eastern Bering Sea and Gulf of Alaska, May 28- September 1.

Haul no.	Station no.	Start latitude (ddmm.m)	Start longitude (dddmm.m)	End latitude (ddmm.m)	End longitude (dddmm.m)	Start depth (m)	End depth (m)
1	1	5846.7	17734.47	5847.8	17741.40	156	277
2	1	5848.0	17741.48	5851.4	17750.10	229	654
3	2	5837.2	17638.41	5834.5	17646.10	142	503
4	2	5834.5	17646.63	5833.1	17654.69	562	935
5	4	5829.8	17540.57	5829.2	17548.96	211	383
6	4	5829.1	17549.20	5830.0	17556.00	384	803
7	6	5819.9	17419.14	5824.1	17423.30	172	573
8	6	5824.2	17423.71	5824.7	17431.13	368	610
9	8	5737.7	17409.84	5727.1	17414.47	152	435
10	8	5742.4	17414.52	5747.0	17418.76	414	836
11	10	5649.7	17322.74	5654.0	17324.84	208	500
12	10	5654.3	17325.04	5658.4	17328.00	540	629
13	12	5637.6	17221.16	5634.5	17226.23	189	542
14	12	5634.2	17226.42	5629.9	17230.45	561	682
15	13	5628.0	17127.25	5627.6	17135.85	205	488
16	13	5627.6	17136.48	5627.3	17144.67	378	681
17	15	5609.5	17040.00	5607.5	17046.30	139	481
18	15	5607.8	17046.80	5609.6	17054.48	452	813
19	17	5602.2	16937.01	5559.5	16942.69	199	459
20	17	5559.5	16943.27	5559.3	16952.07	384	581
21	18	5614.6	16910.32	5610.9	16916.73	175	644
22	18	5610.7	16917.04	5607.3	16923.38	651	837
23	20	5548.5	16855.77	5550.4	16855.77	222	657
24	20	5550.8	16856.75	5554.6	16900.93	583	782
25	22	5527.5	16759.90	5525.5	16802.05	161	264
26	22	5525.4	16808.31	5523.4	16815.97	270	560
27	34	5321.1	16859.21	5318.2	16853.51	615	845
28	34	5318.3	16853.29	5317.7	16846.94	498	945
29	33	5336.7	16817.77	5336.6	16810.20	121	707
30	33	5336.7	16809.90	5337.5	16801.95	415	771
31	32	5346.3	16719.79	5343.0	16722.67	121	578
32	32	5340.0	16722.87	5341.8	16729.31	417	662
<u>Gulf of Alaska</u>							
33	63	5257.8	16808.14	5552.7	16812.66	109	372
34	63	5254.7	16812.88	5251.0	16814.11	226	687
35	62	5239.4	16859.69	5236.8	16905.67	156	631
36	62	5236.8	16906.07	5233.2	16910.50	503	761
37	64	5311.5	16651.30	5307.4	16653.31	210	311
38	64	5307.3	16653.35	5303.3	16655.82	322	600

Table 1. Continued

Haul no.	Station no.	Start latitude (ddmm.m)	Start longitude (dddmm.m)	End latitude (ddmm.m)	End longitude (dddmm.m)	Start depth (m)	End depth (m)
39	65	5334.9	16541.06	5330.6	16543.58	122	296
40	65	5330.4	16543.76	5326.3	16547.14	303	464
41	66	5344.2	16428.14	5340.8	16433.15	136	284
42	66	5340.7	16433.26	5337.6	16439.20	302	604
43	68	5407.9	16138.23	5405.3	16143.22	119	437
44	68	5405.3	16143.49	5403.6	16149.00	310	837
45	67	5358.2	16315.79	5354.4	16319.26	115	420
46	67	5354.3	16319.45	5351.9	16325.08	389	735
47	69	5418.8	16103.63	5415.8	16109.28	175	379
48	69	5415.7	16109.66	5412.6	16114.74	400	808
49	70	5421.9	16014.15	5418.2	16017.49	142	285
50	70	5418.1	16017.65	5414.1	16018.44	296	597
51	71	5430.5	15915.43	5426.6	15918.99	144	271
52	71	5426.5	15919.08	5422.8	15923.12	273	687
53	72	5438.1	15834.95	5434.1	15838.60	125	342
54	72	5433.9	15838.75	5430.0	15841.95	358	810
55	73	5451.0	15744.20	5447.5	15748.16	188	391
56	73	5447.4	15748.41	5443.3	15752.01	395	538
57	74	5514.3	15614.39	5510.6	15644.35	162	326
58	74	5510.4	15644.54	5506.6	15644.43	322	747
59	75	5538.4	15550.94	5534.1	15551.71	147	212
60	75	5534.0	15551.73	5530.0	15550.04	212	212
61	148	5438.9	13250.32	5435.9	13255.94	140	381
62	149	5435.9	13301.43	5435.8	13309.37	389	416
63	108	5427.5	13354.93	5429.3	13400.62	256	657
64	108	5429.6	13401.03	5433.2	13404.38	533	929
65	107	5454.0	13417.25	5457.4	13420.86	227	562
66	107	5457.6	13421.05	5500.3	13426.08	467	886
67	106	5520.7	13443.91	5523.2	13449.31	381	631
68	106	5523.8	13449.79	5523.2	13456.98	455	812
69	105	5533.5	13458.01	5534.6	13503.07	214	541
70	105	5534.9	13503.30	5537.5	13507.78	491	868
71	144	5555.8	13454.09	5559.8	13454.77	196	360
72	145	5602.0	13455.65	5604.9	13500.61	368	378
73	104	5558.9	13526.21	5601.3	13531.87	352	632
74	104	5601.9	13532.06	5604.6	13536.98	586	842
75	103	5623.0	13520.90	5622.9	13528.74	155	188
76	103	5623.0	13529.00	5622.1	13536.31	189	233
77	102	5651.0	13559.82	5653.6	13605.48	252	774
78	102	5654.0	13605.68	5657.7	13606.79	769	848
79	101	5711.3	13614.06	5712.7	13619.81	213	605

Table 1. Continued

Haul no.	Station no.	Start latitude (ddmm.m)	Start longitude (dddmm.m)	End latitude (ddmm.m)	End longitude (dddmm.m)	Start depth (m)	End depth (m)
80	101	5713.1	13619.98	5716.6	13622.80	578	997
81	100	5737.0	13632.35	5736.7	13639.60	239	847
82	100	5736.7	13640.22	5739.5	13645.56	699	947
83	142	5755.0	13700.67	5755.1	13708.76	398	445
84	143	5757.9	13704.57	5758.0	13712.30	273	424
85	98	5808.3	13844.49	5809.3	13851.93	396	824
86	98	5809.6	13852.30	5810.6	13859.18	576	924
87	99	5752.7	13722.69	5753.0	13729.54	182	820
88	99	5753.0	13730.10	5752.5	13736.89	527	841
89	97	5828.0	13928.19	5827.3	13936.23	192	561
90	97	5827.2	13936.68	5825.0	13942.25	530	845
91	138	5925.0	14056.22	5925.4	14105.00	204	292
92	139	5924.8	14110.17	5921.3	14115.15	320	326
93	96	5841.0	14038.56	5841.3	14046.52	239	632
94	96	5841.5	14047.16	5843.8	14053.56	422	731
95	95	5903.0	14120.66	5903.0	14128.00	292	505
96	95	5902.9	14129.57	5903.0	14138.04	569	882
97	93	5932.9	14233.92	5935.4	14241.11	118	617
98	93	5935.5	14241.34	5934.6	14247.74	581	630
99	137	5940.7	14322.29	5943.4	14329.01	298	312
100	136	5944.7	14335.27	5945.0	14342.96	158	298
101	94	5923.3	14210.11	5925.4	14217.12	231	412
102	94	5925.7	14217.43	5928.4	14224.17	353	866
103	92	5933.3	14339.33	5933.6	14348.02	170	778
104	92	5933.6	14349.04	5935.1	14357.18	632	837
105	91	5931.2	14442.77	5929.0	14450.63	180	464
106	91	5928.9	14451.01	5926.7	14458.69	472	862
107	90	5930.0	14531.69	5931.0	14540.59	157	825
108	90	5931.0	14541.32	5931.4	14549.84	494	830
109	89	5915.8	14651.28	5912.9	14658.67	190	565
110	89	5912.9	14659.23	5909.4	14705.12	454	1008
111	134	5930.9	14658.03	5933.7	14704.09	207	210
112	135	5930.8	14709.15	5926.5	14708.94	207	217
113	88	5909.5	14736.19	5904.7	14737.02	238	510
114	88	5904.5	14737.06	5859.9	14737.80	529	920
115	87	5907.5	14839.09	5903.6	14838.99	156	189
116	87	5903.5	14839.01	5859.4	14839.01	192	240
117	132	5904.9	14924.03	5902.4	14930.74	185	224
118	133	5857.0	14930.55	5855.2	14938.05	239	241
119	130	5843.6	14911.66	5846.1	14904.83	177	215
120	131	5848.0	14912.87	5850.2	14856.31	229	252

Table 1. Continued

Haul no.	Station no.	Start latitude (ddmm.m)	Start longitude (dddmm.m)	End latitude (ddmm.m)	End longitude (dddmm.m)	Start depth (m)	End depth (m)
121	86	5841.3	14820.02	5837.0	14819.95	282	450
122	86	5836.8	14819.91	5832.7	14819.72	482	932
123	85	5817.6	14837.03	5813.3	14839.35	224	513
124	85	5813.1	14839.42	5808.8	14841.99	546	823
125	84	5758.2	14910.23	5754.7	14915.46	169	491
126	84	5754.6	14915.63	5750.9	14920.18	509	875
127	128	5759.9	14950.55	5758.9	14958.79	228	260
128	129	5805.0	14954.66	5803.9	15003.02	296	310
129	83	5737.5	14954.94	5733.1	14959.48	417	570
130	83	5733.0	14957.62	5728.5	14959.38	616	930
131	82	5724.0	15034.48	5719.5	15035.93	211	496
132	82	5719.1	15035.98	5714.5	15036.05	513	713
133	81	5707.0	15113.27	5702.8	15116.68	262	538
134	81	5702.6	15116.70	5658.1	15116.94	596	860
135	80	5629.0	15212.83	5625.3	15217.90	137	455
136	80	5625.1	15218.06	5620.8	15221.28	561	819
137	79	5618.1	15304.55	5615.9	15310.65	277	508
138	79	5615.8	15310.92	5613.1	15316.50	481	758
139	78	5558.7	15401.28	5554.6	15401.21	275	542
140	78	5554.3	15401.29	5550.5	15403.12	580	886
141	77	5602.4	15434.00	5557.9	15434.27	245	542
142	77	5557.7	15434.31	5553.3	15434.46	588	884
143	76	5545.9	15508.34	5541.8	15510.79	156	310
144	76	5541.5	15510.93	5538.0	15515.27	357	575
145	127	5719.6	15522.94	5720.6	15516.49	247	256
146	126	5720.7	15502.44	5721.0	15510.62	237	241
147	124	5659.3	15503.74	5659.9	15511.25	168	231
148	125	5700.1	15518.18	5702.6	15524.29	253	263
149	120	5547.2	15604.70	5545.8	15611.88	205	237
150	121	5545.0	15612.04	5543.8	15619.51	241	251
151	122	5611.2	15557.78	5610.9	15605.32	194	238
152	123	5613.9	15607.96	5615.1	15614.66	246	264

Table 2. --Catch by station in number by species for the 2005 NMFS longline survey of the Eastern Bering Sea and the Gulf of Alaska, May 28 - September 1. SF = sablefish, PC = Pacific cod, GR = giant grenadiers, PH = Pacific halibut, ATF = arrowtooth flounder, GT = Greenland Turbot, RF = rougheye and shortraker rockfish, ST = thornyheads, Sk = skate, OS = otherspecies

Station	SF	PC	GR	PH	ATF	GT	RF	ST	SK	OS
<u>Eastern Bering Sea</u>										
2	131	573	2,372	70	139	142	18	8	146	265
4	366	216	1,195	155	199	170	24	12	142	254
6	79	412	866	794	268	110	140	4	285	67
8	190	275	1,192	150	156	155	50	18	80	53
12	324	392	1,445	33	430	80	23	71	242	45
13	359	598	1,839	100	386	54	160	35	160	77
15	221	673	716	112	203	29	171	145	70	166
17	275	225	899	32	470	36	181	33	37	61
18	918	76	1,122	13	613	283	14	20	147	56
20	1,363	183	105	64	506	244	13	60	256	25
22	252	1,286	19	29	472	155	3	3	170	187
32	1,706	369	43	185	310	49	84	237	87	58
33	1,218	681	261	299	190	95	176	150	58	91
34	1,140	0	100	32	429	217	0	196	399	38
<u>Gulf of Alaska</u>										
65	1,329	159	1,614	136	122	0	41	73	38	35
66	847	129	0	54	60	0	0	3	28	14
67	1,940	152	770	80	113	0	159	142	19	108
68	960	396	576	202	158	0	340	231	43	48
69	1,045	14	2,267	52	76	0	16	100	6	24
70	1,370	405	1,353	601	99	0	17	93	12	95
71	2,217	283	880	71	58	0	9	58	20	47
72	1,946	498	1,234	97	71	0	12	121	16	37
73	2,363	44	1,341	7	117	0	28	47	5	15
74	2,736	56	293	37	84	0	16	361	15	162
75	502	390	0	354	500	0	22	3	49	94
76	1,010	24	1,038	148	178	0	27	130	81	456
77	1,395	12	1,092	17	51	0	32	293	26	155
78	650	0	1,948	102	44	0	199	189	7	743
79	2,096	0	534	30	10	0	28	254	0	56
80	603	11	1,175	171	80	0	135	180	4	98
81	1,343	0	1,548	24	88	0	21	124	2	381
82	1,570	38	583	63	192	0	25	220	7	98
83	1,028	0	1,851	2	3	0	0	223	2	422
84	768	117	913	104	93	0	32	343	39	285
85	1,194	0	2,212	44	175	0	38	281	13	84
86	832	0	629	27	80	0	218	381	13	278
87	1,498	41	0	225	35	0	0	66	120	190
88	1,513	0	777	17	30	0	162	284	17	419
89	875	36	410	56	14	0	60	345	44	393
90	501	7	926	64	19	0	191	112	26	52
91	1,065	54	514	42	19	0	136	377	59	174
92	699	0	944	18	5	0	39	122	5	52
93	1,886	0	352	61	11	0	26	563	20	82
94	862	0	217	23	120	0	353	388	37	201
95	1,110	0	291	16	15	0	436	458	30	107
96	1,770	0	267	28	24	0	351	245	26	104
97	972	1	484	5	5	0	136	198	14	145
98	967	0	836	1	3	0	264	59	2	67
99	1,075	0	378	3	8	0	81	160	19	197
100	1,224	6	338	2	7	0	31	242	4	140
101	1,221	6	413	7	7	0	123	219	2	181
102	1,069	2	133	4	11	0	49	198	13	125
103	140	133	0	211	62	0	1	15	29	788
104	1,228	0	245	3	5	0	180	341	10	128
105	1,237	25	178	43	9	0	319	159	18	259
106	1,465	0	256	0	8	0	332	188	3	183

Table 2. Continued

Station	SF	PC	GR	PH	ATF	GT	RF	ST	SK	OS
107	1,849	0	305	4	12	0	545	192	14	189
108	1,331	0	206	3	2	0	362	164	19	175
120	322	181	0	278	144	0	0	1	124	43
121	560	8	0	86	62	0	0	15	210	11
122	276	324	0	136	144	0	0	1	75	15
123	621	40	0	42	213	0	0	0	156	11
124	251	91	0	67	398	0	0	0	159	14
125	182	34	1	120	309	0	0	0	124	8
126	140	47	0	100	372	0	1	0	165	52
127	191	41	0	109	94	0	2	0	114	37
128	1,219	25	0	87	112	0	0	17	8	7
129	1,405	0	0	44	66	0	1	19	12	7
130	1,344	1	0	15	8	0	0	18	41	20
131	1,362	3	0	13	19	0	10	86	48	44
132	381	3	0	12	10	0	1	12	138	147
133	1,171	0	0	7	52	0	0	56	115	50
134	132	2	0	7	9	0	4	9	131	1,141
135	280	1	0	23	11	0	40	15	77	1,458
136	335	8	0	51	20	0	32	90	76	91
137	202	0	0	6	12	0	8	176	64	14
138	505	0	0	34	36	0	31	136	34	57
139	647	0	0	33	15	0	98	54	103	26
142	1,294	0	33	3	2	0	15	187	5	15
143	1,408	0	6	7	7	0	8	41	12	26
144	160	36	0	80	55	0	87	324	42	114
145	1,092	0	0	1	14	0	30	76	18	229
148	969	94	0	53	11	0	11	97	90	488
149	1,168	1	0	18	3	0	10	93	79	65
Total	81,460	9,938	44,535	6,759	9,852	1,819	7,038	11,460	5,475	13,719

Table 3.- Mean length, round weight, mean dressed weight, number and estimated total round weight of sablefish by station, for the 2005 NMFS longline survey of the Eastern Bering Sea and the Gulf of Alaska May 28 - September 1.

Station Number	Mean length (cm)	Mean round weight (kg) ²	Mean dressed weight (lb) ³	Number of sablefish	Estimated total round weight (kg) ⁴
<u>Eastern Bering Sea</u>					
2	63.53	2.82	3.91	131	369.12
4	63.44	2.73	3.79	366	998.04
6	68.79	3.59	4.98	79	283.26
8	67.41	3.37	4.68	190	640.08
12	61.04	2.39	3.33	324	775.74
13	65.44	3.01	4.18	359	1,080.15
15	67.52	3.37	4.69	221	745.87
17	64.7	2.91	4.05	275	801.09
18	60.8	2.36	3.28	918	2,169.30
20	61.65	2.46	3.41	1,363	3,350.78
22	58.4	2.05	2.84	252	515.93
32	61.19	2.42	3.36	1,706	4,126.30
33	61.6	2.5	3.48	1,218	3,047.91
34	62.58	2.65	3.68	1,140	3,018.11
<u>Gulf of Alaska</u>					
65	61.93	2.51	3.48	1,329	3,332.40
66	57.4	1.95	2.7	847	1,647.74
67	62.3	2.6	3.61	1,940	5,039.84
68	66.57	3.27	4.54	960	3,139.18
69	59.79	2.32	3.22	1,045	2,419.30
70	61.93	2.55	3.54	1,370	3,488.63
71	63.23	2.73	3.79	2,217	6,044.98
72	65.41	3.05	4.23	1,946	5,928.06
73	63.5	2.78	3.87	2,363	6,580.59
74	65.71	3.09	4.29	2,736	8,443.72
75	60.3	2.34	3.25	502	1,174.48
76	61.99	2.57	3.57	1,010	2,593.79
77	65.35	3.07	4.27	1,395	4,288.41
78	67.53	3.41	4.74	650	2,218.94
79	66.1	3.14	4.37	2,096	6,590.28
80	67.78	3.43	4.76	603	2,068.35
81	66.79	3.3	4.59	1,343	4,433.74

² Mean weight was estimated by applying a length-weight relationship to the length frequency distribution from each station.

³ Mean dressed weight was estimated using a recovery rate of 0.6 of round weight in pounds.

⁴ Estimated total round weight is the product of mean round weight and the number of hooked sablefish that came to the surface, including a small percentage that was lost in landing.

Table 2. Continued

Station Number	Mean length (cm)	Mean round weight (kg)	Mean dressed weight (lb)	Number of sablefish	Estimated total round weight (kg)
82	65.33	3.04	4.23	1,570	4,780.03
83	69.34	3.74	5.2	1,028	3,847.61
84	66.26	3.22	4.47	768	2,473.91
85	68.5	3.57	4.96	1,194	4,265.50
86	69.77	3.87	5.37	832	3,219.45
87	64.72	2.99	4.16	1,498	4,483.21
88	69.96	3.85	5.34	1,513	5,818.19
89	68.68	3.68	5.11	875	3,217.16
90	66.88	3.33	4.62	501	1,665.83
91	69.24	3.77	5.23	1,065	4,012.40
92	69.77	3.84	5.34	699	2,685.21
93	70.33	3.93	5.45	1,886	7,407.07
94	67.28	3.4	4.73	862	2,933.93
95	69.9	3.85	5.35	1,110	4,278.40
96	69.3	3.71	5.15	1,770	6,566.03
97	68.57	3.69	5.13	972	3,590.34
98	71.21	4.14	5.75	967	4,003.23
99	71.54	4.16	5.77	1,075	4,469.37
100	68.8	3.61	5.01	1,224	4,415.34
101	69.66	3.79	5.27	1,221	4,630.96
102	69.24	3.7	5.14	1,069	3,958.56
103	59.2	2.26	3.14	140	316.35
104	64.81	2.97	4.12	1,228	3,643.40
105	68.43	3.59	4.98	1,237	4,437.15
106	67.56	3.41	4.74	1,465	4,999.00
107	69.99	3.84	5.34	1,849	7,103.51
108	70.12	3.88	5.39	1,331	5,162.13
120	65.55	3.04	4.22	322	978.67
121	64.12	2.84	3.94	560	1,588.58
122	65.39	3	4.17	276	828.12
123	64.55	2.87	3.99	621	1,783.41
124	63.23	2.67	3.71	251	669.82
125	63.1	2.68	3.72	182	487.98
126	62.11	2.53	3.51	140	353.76
127	63.44	2.71	3.76	191	516.84
128	64.7	2.89	4.02	1,219	3,527.60
129	65.97	3.09	4.3	1,405	4,345.84
130	65.72	3.06	4.25	1,344	4,108.36
131	67.02	3.28	4.56	1,362	4,473.55
132	62.93	2.76	3.83	381	1,051.85
133	63.08	2.73	3.79	1,171	3,195.88
134	60.05	2.49	3.46	132	329.00
135	54.4	1.77	2.46	280	496.62
136	64.38	3.17	4.4	335	1,060.88
137	60.23	2.33	3.24	202	470.65

Table 3. Continued

Station Number	Mean length (cm)	Mean round weight (kg)	Mean dressed weight (lb)	Number of sablefish	Estimated total round weight (kg)
138	62.99	2.79	3.88	505	1,409.37
139	67.08	3.37	4.68	647	2,182.35
142	64.37	2.85	3.97	1,294	3,694.19
143	65.25	3	4.17	1,408	4,222.88
144	65.17	3.07	4.26	160	490.97
145	63.29	2.74	3.81	1,092	2,992.21
148	64.96	2.97	4.13	969	2,880.64
149	61.59	2.47	3.43	1,168	2,884.74
Total				81,460	254,762.14

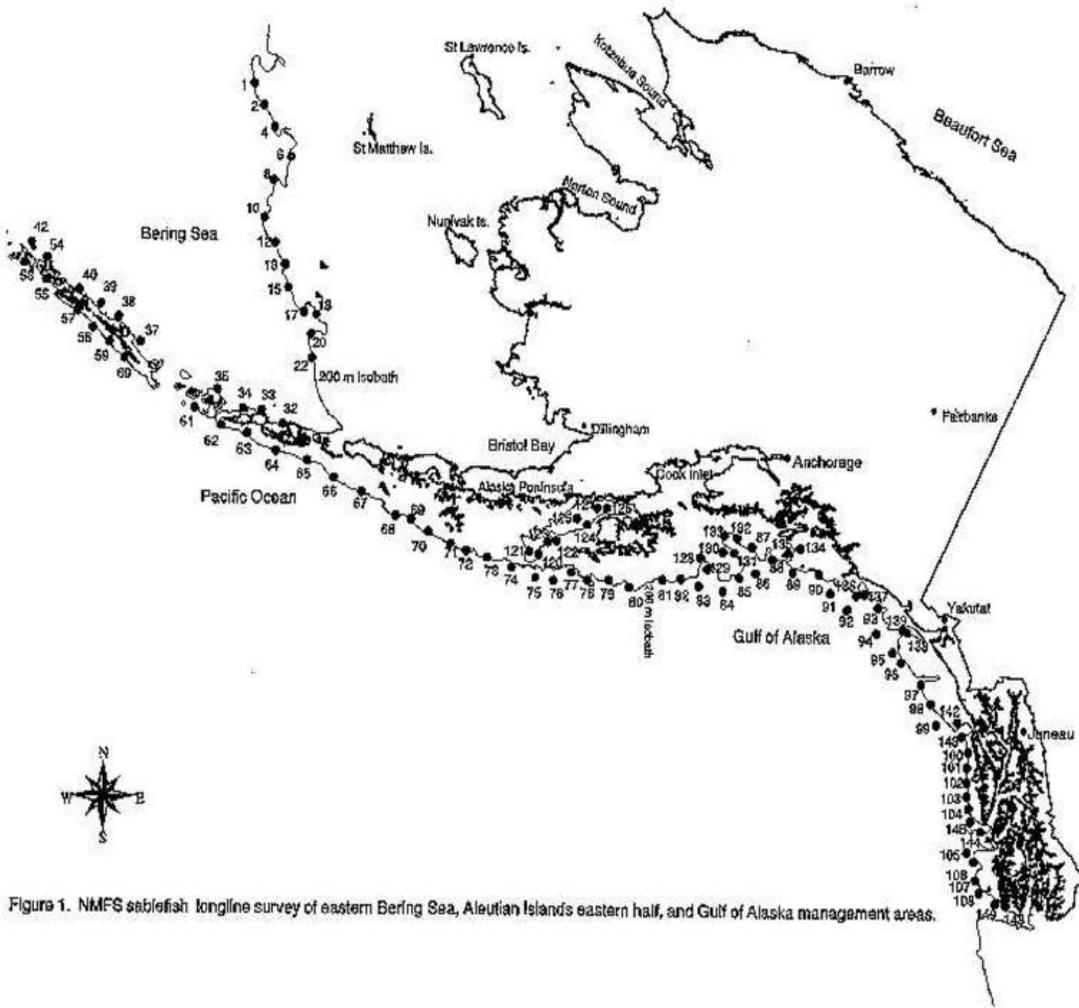


Figure 1. NMFS sablefish longline survey of eastern Bering Sea, Aleutian Islands eastern half, and Gulf of Alaska management areas.